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EXAMINER

PEACE, RHONDA S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/581,617 | Applicant(s) KNUDSEN, PETER BACK | |
| | Examiner Rhonda S. Peace | Art Unit 2874 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, see page 6, filed 8/21/2009, with respect to the rejection of claims 4, 8, 15, and 19 under 35 U.S.C. 112, second paragraph, have been fully considered and are persuasive. The rejection of claims 4, 8, 15, and 19 under 35 U.S.C. 112, second paragraph, has been withdrawn.

Applicant's arguments, see pages 6-8, filed 8/21/2009, with respect to the rejection of claims 1-3, 6, 11, 13, 14, and 17 under 35 U.S.C. 102(b) in view of Tai et al (US 5,359,691) have been fully considered and are persuasive, as Tai et al fails to disclose or reasonably suggest two or more tapered light guides arranged in series as required by the claims. The rejection of claims 1-3, 6, 11, 13, 14, and 17 under 35 U.S.C. 102(b) has been withdrawn.

Applicant's arguments, see pages 6-9, filed 8/21/2009, with respect to the rejection of claims 1-3, 5-8, 11, 13, 14, and 16-19 under 35 U.S.C. 103(a) in view of Tiao et al (US 6,318,863) and Tai et al have been fully considered but they are not persuasive.

Applicant argues the combination of Tiao et al and Tai et al fail to disclose taper shaped void areas that are arranged to receive electrical elements. The Examiner agrees neither of Tiao et al nor Tai et al explicitly disclose the taper shaped voids between the taper light pipes are arranged to receive electrical elements. However, the Examiner opines such a limitation is obvious in view of the combination of Tiao et al and Tai et al, for the purpose of creating a more compact display element. The taper void

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areas shown by Tiao et al are certainly capable of receiving electrical elements, and one of ordinary skill in the art would have been motivated to place electrical elements, such as electrical connections and additional electrical elements, etc, associated with the nearby light emitters, in the void areas between the taper light guides for the purpose of creating a smaller, more compact display element.

With regard to the rejection of claims 4, 10, 12, and 15, Applicant argues Tiao et al, Tai et al, and Bassous et al (US 4,007,464) are not properly combinable, since Bassous et al relates to an ink jet system, and therefore is from a totally different field of technology. The Examiner disagrees.

In response to applicant's argument that Tiao et al, Tai et al, and Bassous et al are nonanalogous arts, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Bassous et al is drawn in part to the processing of a substrate or plate to form a tapered void region. Tiao et al also is drawn to the use of tapered void regions, and in this manner, Taio et al and Bassous et al are analogous arts. Bassous et al, despite Applicant's assertions, is not required to teach tapered light pipes, as these teachings are disclosed by Tiao et al, and Bassous et al is simply relied upon to show the teaching of forming a tapered void region in a substrate via an etching process. Clearly this process is applicable to Tiao et al, which utilizes a series of tapered light pipes having a void region between each of the pipes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5-8, 11, 13, 14, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691).

Pertaining to claims 1 and 11, Tiao et al discloses a display and a method of forming said display comprising a light transmissive display 230, a plurality of light emitters 202, a light guiding plate 220 overlapping and being substantially parallel to the light transmissive display 230, and a plurality of tapered light guides 212 arranged in series with one another and each extending between said plate 220 and said emitters 202. See col. 3 lines 7-31. The tapered light guides 212 are each adapted to direct light from an emitter 202 in said plurality of emitters to the said plate 220. The plate acts to guide the light received from said tapered guides 212 and guides light parallel to

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said transmissive display 230 such that the light is received by and directed through said transmissive display 230. See col. 3 lines 31-47. As seen in Figure 2A, the guides 212 form taper shaped void areas between each of the guides 212. The light transmissive display 230 and plate 220 at least partially overlap one another, as shown in Figure 2A.

Further pertaining to claims 1 and 11, while Tiao et al discloses the display as described above, Tiao et al does not disclose an arrangement wherein the plate guides the received light in a direction parallel to a plane of a displaying surface of the light transmissive display, or in other words, Tiao et al fails to disclose an edge-lit plate and instead discloses a back-lit plate where the light sources at least partially overlap both the plate and the light transmissive display.

Tai et al discloses a backlighting system for a liquid crystal flat panel display a method of forming an apparatus as seen in Figure 1 comprising: providing a light transmissive display 12, providing a light transmissive plate 14 so as to overlap with and be substantially parallel with the light transmissive display 12, providing one or more light emitters 64 and 64' adapted to emit light into the light transmissive plate 12, the light 30 and 30' received substantially parallel to a plane of a displaying surface of the light transmissive display 12, and providing one or more tapered light guides 28 and 28' between the one or more light emitters 64 and 64' and the light transmissive plate 14. See Tai: Figure 1, col. 4 lines 27-41, and col. 5 lines 43-50. As seen in Figure 1 of Tai et al, the light sources 64 and 64' act to provide an edge-lit plate 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teachings of Tiao et al and Tai et al, thereby orientating the light sources and tapered light guides of Tiao et al such that said sources, guides, and the plate form an edge-lit backlighting device, where the plate guides the received light in a direction parallel to a plane of a displaying surface of the light transmissive display, as Tai et al discloses that such an edge-displays are more compact than the backlight as taught by Tiao et al, and due to their compact nature and ability to provide high intensity light and controllable collimation, are useable in stacked panel displays, colored displays in portable computers, as well as real time flat displays. See Tai et al, col. 2 lines 1-7.

Further, Tiao et al does not disclose the taper shaped void areas as being arranged to receive electrical elements. However, the void areas of Tiao et al are capable of receiving electrical components, and one of ordinary skill in the art would have found it obvious to arrange electrical elements, such as electrical elements and electrical connections associated with the nearby light emitters, within the void areas for the purpose of utilizing unused space within the display and thereby creating a more compact display.

Concerning claims 2, 5, 6, and 8, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al discloses the tapered light guides 212 extend along the entire length of side 220a of plate 220 and couple light from the emitters 202 through the side 220a of plate 220. See Tiao et al, col. 3 lines 41-47. The emitters 202 have a maximum size that is significantly smaller than the plate

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220, as seen in Figure 2. The plate 220 has a side 220b facing the transmissive display and being the same area as the transmissive display. See Tiao et al, col. 3 lines 46-47. As seen in Figure 2 of Tiao et al, the distance between the upper-most emitter 202 and the bottom-most emitter 202 is approximately equal to the length of side 202b. Array 200, comprising emitters 202 and their corresponding electrical elements, is partially positioned between the emitters 202 and the guides 212, as seen in Figure 2 of Tiao et al.

Addressing claims 13 and 17, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al discloses the tapered guides 212 are adapted to introduce light into a predetermined side 220a of the plate 220, and the light guides 212 together extend along the substantial entirety of the length of side 220a, as seen in Figure 2A. As is apparent from the Figure 2A of Tiao et al, each light emitter 202 has a largest physical dimension (for example, diameter) that is significantly lower than the largest physical dimension (for example, the length of side 220a) of the plate 220.

Concerning claim 3, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the light guides being a single, monolithic element. Nonetheless it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the tapered guides as a single, monolithic element such that said guides are integral, since it has been held that forming in one piece an article which has formerly

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been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Pertaining to claim 7, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the device comprising at most ten emitters. Nonetheless, it would have been obvious to one of ordinary skill in the art to include at most ten emitters in the device of Tiao et al in order to avoid excessive illumination. Moreover, it has been held that discovering an optimum value (such as ten) of a result effective variable (such as the number of emitters included in a device) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Addressing claim 16, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose positioning an electrical element between the tapered portion of the plate and the light emitters, or more specifically between the taper light guides and the light emitters. However, the disclosed types of light sources in Tiao et al, such as LEDs, OLEDs, laser diodes, etc, all require additional electrical elements, for example, to provide electrical power and/or control signals to the light emitter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position an electrical element between the taper light guides and the light emitters, to provide the required electrical power and/or control signals to the light emitters.

Concerning claim 14, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does

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not disclose forming the light guides as a single monolithic element. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the light guides as a single monolithic element as it has been held that forming in one piece an article which has formerly been formed in multiple pieces involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Addressing claim 18, Tiao et al in view of Tai et al disclose the display and method as described above. Note also that Tiao et al discloses four light emitters, which is less than the “at most ten emitters” as recited in the claim. However, the combination of Tiao et al and Tai et al does not disclose the step of providing one or more light emitters comprises providing at most ten light emitters, i.e. Tiao et al does not disclose always using ten or less emitters. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device as having at most ten light emitters, thereby providing ample light for lighting the display, while avoiding excessive illumination that is capable of causing deterioration of the display's image. In the very least, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device as having at most ten light emitters, as a person of ordinary skill has good reason to pursue the technical options within their grasp, such as the proper amount of illumination required for a display. If this leads to the anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

Pertaining to claim 19, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al also discloses the display 230 and the plate 220 are positioned to face one another along the plate's side 220b, wherein side 220b has a surface area substantially equal to the surface of the display 230. See Tiao et al, col. 3 lines 45-47. However, the combination of Tiao et al and Tai et al does not disclose the distance between the light emitters as exceeding 25% of the length of the predetermined side (side 220a) of the plate. Tiao et al does, however, disclose an embodiment wherein such an arrangement is possible, wherein only two emitters are provided, wherein the two emitters couple light into the plate via two light guide pipes. In this instance, the light emitters would be spaced at a distance exceeding 25% of side 220a of the plate, as the sides 212b of the guides 212 must cover the entirety of side 220a of the pipe 220. See col. 11 lines 56-64. Therefore, it would have been obvious to one of ordinary skill in the art to form the device such that the distance between the light emitters as exceeding 25% of the length of the predetermined side of the plate, as this is one of the many possible arrangements described by Tiao et al, and a person of ordinary skill has good reason to pursue the technical options within their grasp, such as the proper amount of illumination required for a display. If this leads to the anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691), in further view of Tsutsui et al (US 2001/0030571A1).

With regard to claim 9, Tiao et al and Tai et al discloses the device as described above, wherein Tai discloses the LCD device is suitable for a colored display in a computer. See Tai et al, col. 2 lines 1-7. Also, Tiao et al does disclose the above device as suitable for an LCD display. See Tiao et al, col. 2 lines 15-21. However, the combination of Tiao et al and Tai et al does not directly disclose the above device as being used within a mobile phone. Tsutsui et al discloses an LCD used within a mobile phone as a display panel. See ¶ 0031. Therefore, it would have been obvious to one of ordinary skill in the art to utilize the above device in a mobile phone, as this increases the functionality and marketability of the device, as said device is usable in more applications.

Claims 4, 10, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691), in further view of Bassous et al (US 4,007,464).

Pertaining to claim 10, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose wherein the step of providing the plate comprises removing tapered portions of the plate so as to provide a tapered part of the plate between each group of one or more said light guides and the portion of the plate overlapping said transmissive display. In other words, Tiao et al discloses light guides 212 are formed separately from plate 220, and therefore Tiao et al does not disclose forming said guides and plate as an integral material, wherein the tapered portions of the guides are formed by a process which removes a portion of the material forming the guides and plate, such as etching

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or patterning. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the tapered guides 212 and plate 220 of the same material such that guides 212 and plate 202 are integral, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Further pertaining to claim 10, Bassous et al discloses a silicon substrate in which a tapered recess is formed in said substrate with an etching process, thereby creating a triangular-shaped recess in the surface of said substrate. See col. 3 lines 28-59 and Figs 1-2. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tiao et al and Bassous et al, thereby forming the tapered recesses in the integral guide/plate structure, thereby forming the device as seen in Figure 2 of Tiao et al, as Bassous et al discloses such an etching process, wherein a portion of the substrate is removed to form a desired geometry, as the process provides a high degree of control to form a desired geometry. See Bassous et al, col. 2 lines 3-11.

Pertaining to claims 4 and 15, Tiao et al in view of Tai et al discloses the device and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the recesses being formed such that two adjacent tapered light guides are defined by a rounded shape. Tiao et al, as seen in Figure 2, shows two adjacent tapered light guides defined by a sharp-pointed triangular shape. Bassous et al, as described above, discloses the bottom of the recess in the silicon substrate may

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be rounded, thereby forming a pyramid-shaped recess with a rounded apex. See col. 3 lines 56-58 and Figs 1-2. It would have been obvious to one of ordinary skill in the art to form the recesses that two adjacent tapered light guides are defined by a rounded shape, as Bassous et al discloses the rounded-apex geometry reduces stress on the substrate. See Bassous et al, col. 3 lines 56-59.

Addressing claim 12, Tiao et al in view of Tai et al, in further view of Bassous et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al and Bassous et al does not disclose positioning an electrical element between the tapered portion of the plate and the light emitters, or more specifically between the taper light guides and the light emitters. However, the disclosed types of light sources in Tiao et al, such as LEDs, OLEDs, laser diodes, etc, all require additional electrical elements, for example, to provide electrical power and/or control signals to the light emitter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position an electrical element between the taper light guides and the light emitters, to provide the required electrical power and/or control signals to the light emitters.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda S. Peace whose telephone number is (571)272-8580. The examiner can normally be reached on M-F (8-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272- 2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rhonda S. Peace/
Examiner, Art Unit 2874
October 26, 2009

/UYEN-CHAU N. LE/
Supervisory Patent Examiner, Art Unit 2874